Job strain and retirement

Martin Turcotte and Grant Schellenberg

The decision to retire early may be influenced by many factors, but financial considerations are usually central. Those who have saved enough throughout their working life and who are covered by a pension plan are likely to leave the labour force sooner than others. In contrast, the self-employed and individuals without pension coverage or sufficient savings may have to work until later in life.

An often overlooked factor may also influence the retirement decision: the intrinsic characteristics of one's job. Even after a long career, some individuals may delay retirement for the simple reason that they enjoy their work. On the other hand, many men and women who feel stressed and dissatisfied with their job may feel they can't retire too soon.

This study examines workers whose job may not fit their expectations, focusing on their level of stress. Using the National Population Health Survey (1994 to 2002), the article asks whether older workers (aged 45 to 57) who experience high job strain will be more likely to retire than those who do not feel the same pressure at work (see *Data source and definitions*). In particular, it examines whether individuals in certain occupations or with particular socio-demographic characteristics are likely to retire early because of job strain.

What is job strain?

Job strain, a concept that was developed more than 20 years ago (Karasek 1979), can be defined as "a measure of the balance between the psychological demands of a job and the amount of control or decision-making power it affords" (Wilkins and Beaudet 1998, 47). Psychological demands include a heavy workload, time constraints and conflicting demands. Control or decision-making power refers to the freedom to decide how to perform tasks and having a say about what happens in one's job. More broadly, it refers to the possibility of learning new things or performing diversified tasks.

Generally, jobs that are psychologically demanding are associated with high stress. However, the stress can be mitigated if individuals have control or decision-making power. In fact, high demands can even lead to increased well-being if workers have control over their tasks (Sargent and Terry 1998). In these 'active' jobs, demands are viewed as challenges that individuals can meet effectively since they are in a position to take autonomous decisions (Dwyer and Ganster 1991).

In contrast, individuals with high demands but little control—that is, in high-strain jobs—are most at risk for work stress. They are also most at risk of developing work-related health problems. Jobs with moderate demands are generally not very stressful, and even less so if control is high. (However, if demands are too low, negative consequences can result—for example, boredom.) In summary, autonomy level is as crucial as demand level in determining how a job will affect an individual's health or well-being.

The Canadian Centre for Occupational Health and Safety defines workplace stress as harmful physical and emotional responses that can happen when job demands conflict with the amount of control an employee has over meeting these demands. Several studies have documented this negative relationship (Wilkins and Beaudet 1998; Kalimo et al. 2003; Dwyer and Ganster 1991; Karasek et al. 1988).

Stress and the decision to retire

This article uses longitudinal data over a period of eight years starting in 1994-95 to examine whether retirement behaviours are related to job strain. Among individuals aged 45 to 57 and working full time in 1994-95, 17% had retired by 2002-03 (see retirement

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Data source and definitions

The **National Population Health Survey** (NPHS) collects health information from private household and institutional residents in the 10 provinces, except on Indian reserves and Armed Forces bases, and in some remote areas.

For each of the first three cycles (1994-95, 1996-97 and 1998-99), two cross-sectional files were produced: general and health. The general file has socio-demographic and some health information for each household member. The health file contains additional, in-depth information about one randomly selected household member. Starting in 2000-01, the NPHS became strictly longitudinal, and the two questionnaires were combined.

In addition to the cross-sectional information, a longitudinal file was produced. In 1994-95, a member from each participating household was randomly selected and the resulting panel of 17,276 was followed over time. Response rates were 92.8% in 1996-97, 88.2% in 1998-99, 84.8% in 2000-01 and 80.6% in 2002-03.

Analytical techniques and definition of retirement
All five cycles of the NPHS were used. For people aged 45 to 57 employed full time in 1994-95 (n=1,213), the relationship between job strain and the likelihood of retirement (the event of interest) was examined. Only individuals completing all five cycles and who either stayed in the workforce or retired in subsequent cycles were selected. Those leaving the workforce for other reasons, including health, were excluded (see Allison 1995, 227 for details on this method). The competing risks approach used allows a focus on events of interest only.

The proportional hazards model allows timing of events and their association with various characteristics to be studied. With this method, "each individual's survival history is broken down into a set of discrete time units that are treated as distinct observations. After pooling these observations, the next step is to estimate a binary regression model predicting whether an event did or did not occur in each time unit." (Allison 1995, 211-12).

Time elapsed since the first cycle (in terms of number of cycles) was included as a continuous variable to correct for the greater the likelihood of retirement with passing time. For each person-year, that variable ranged from 1 to 4.

Many but not all factors in the model were allowed to change over the period since it is more realistic, for example, to assume that the risk of retirement in 2002-03 was related to health status or income in 2000-01 rather than 1994-95. Specifically, three broad categories were created: those fixed at their 1994-95 values, those with two values (1994-95 and 2000-01), and those with four. Factors fixed at their 1994-95 values were sex, place of birth, and education. Variables with four values were self-rated health status, presence of children under 13 (yes/no), marital status (married/not married), income adequacy (see below), class of employment (self-employed/employee), industry, occupation, and province. Job strain was asked only in 1994-95 and 2000-01. In the model including interaction terms, occupation was used for the same periods.

Construction of the job strain variable
Seven questions measured demand and autonomy levels:

> Please tell me if you strongly agree (1), agree (2), neither agree nor disagree (3), disagree (4), or strongly disagree (5).
>
> *Psychological demands*
>
> 1. Your job is very hectic (reversed scores).
> 2. You are free from conflicting demands that others make.
>
> *Control*
>
> 3. Your job requires that you learn new things (reversed scores).
> 4. Your job requires a high level of skill (reversed scores).
> 5. Your job allows you freedom to decide how you do your job (reversed scores).
> 6. Your job requires that you do things over and over.
> 7. You have a lot to say about what happens in your job (reversed scores).

To estimate job strain, the demand items were averaged. The five measuring autonomy and latitude for decision making were also averaged. Average demand was then divided by average autonomy. Individuals whose jobs were not psychologically demanding and who had a high level of autonomy had the lowest scores for job strain (0.2). In contrast, those whose jobs were psychologically very demanding and who had little autonomy or latitude for decision making had the highest scores. In summary, the higher the score, the greater the level of job strain experienced.

The **adequacy of income** variable used in this study classifies the total household income into 3 categories based on total household income and the number of people living in the household.

Lowest and lower-middle income	Less than $30,000 (1 or 2 persons) Less than $40,000 (3 or 4 persons) Less than $60,000 (5 or more persons)
Upper-middle income	$30,000 to $59,999 (1 or 2 persons) $40,000 to $79,999 (3 or 4 persons) $60,000 to $79,999 (5 or more persons)
Highest income	$60,000 or more (1 or 2 persons) $80,000 or more (3 or more persons)

definition in *Data source and definitions*). Not surprisingly, the older people were at the beginning of the period, the greater the likelihood they would have been retired eight years later. For example, of those aged 55 to 57 in 1994-95, 38% had retired, compared with only 6% of those aged 45 to 47. However, age is only

one determinant of retirement, and multivariate analysis allows an examination of the relative importance of various factors, including job strain.

Overall, individuals who experienced high job strain were not significantly more likely to retire than individuals who experienced low strain (Table, first column). While the propensity to retire for individuals experiencing high levels of job strain appears greater, it failed to be statistically significant (p=0.07).

Does this mean that job quality is not related to the decision to retire? Previous research has shown that the relationship between job characteristics (autonomy, use of skills, demands) and health outcomes was not the same for every occupation (Pousette and Johansson Hanse 2002). For example, lack of autonomy may have negative consequences for some types of job but not for others. Accordingly, a supplementary model was run (Table, column 2) and found support for this notion.

Individuals in managerial, professional or technical jobs who expressed high job strain were much more likely to retire than those who expressed low job strain (Chart). For workers in two other occupational groups (sales/services/clerical and blue-collar occupations), job strain was not related to retirement.

Why are managers, professionals and technicians more affected? Perhaps they have different expectations toward their job and their role within the workplace. Many individuals with higher levels of education expect their job to offer a fair amount of latitude and a chance to use their competencies and professional skills. Also, since managers, professionals and technicians generally have higher incomes and are more likely to be covered by a pension plan, those in high-pressure jobs may be less hesitant to retire.

Managers and professionals are also more likely to return to work after retirement (Schellenberg, Turcotte and Ram, forthcoming). With more options for future employment, they may be more willing to leave a job they find unsatisfactory.

In any case, managers, technicians and professionals were much more likely to retire from their job if they felt they had low autonomy, lacked the opportunity for professional development, and were in a hectic job with conflicting demands.

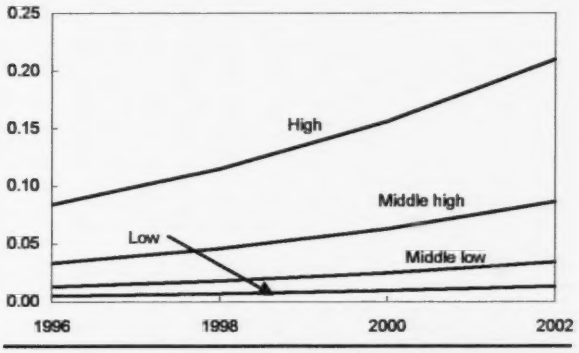
Certain well-known socio-economic variables are related to retirement. For example, the self-employed were about half as likely as employees to retire. The self-employed are not covered by pension plans,

Table Adjusted risk ratios for transition into retirement

	Overall	Interaction terms factored in
Sex		
Men	0.58**	0.58**
Women	1.00	1.00
Place of birth		
Outside Canada	0.56*	0.57*
Canada	1.00	1.00
Self-rated health		
Excellent	1.00	1.00
Very good	1.20	1.22
Good	1.31	1.28
Fair/poor	2.04	1.82
Highest level of schooling		
Less than high school	1.05	1.06
High school	1.17	1.19
College, trade/technical diploma	1.97*	2.07*
University degree	1.00	1.00
Presence of children		
At least one	1.28	1.27
None	1.00	1.00
Marital status		
Married	0.91	0.90
Not married	1.00	1.00
Household income adequacy		
Lowest and lower middle	0.63	0.62
Upper middle	0.78	0.79
Highest	1.00	1.00
Employment status		
Self employed	0.49*	0.50*
Employee	1.00	1.00
Industry		
Consumer services	1.23	1.32
Producer services	1.01	1.12
Public sector	1.50	1.44
Goods-producing	1.00	1.00
Province of residence		
Newfoundland and Labrador	2.43**	2.79*
Prince Edward Island	0.85	0.91
Nova Scotia	2.10*	2.23*
New Brunswick	1.49	1.56
Quebec	1.75*	1.97*
Ontario	1.00	1.00
Manitoba	0.96	1.07
Saskatchewan	1.03	0.99
Alberta	1.03	1.03
BC	1.54	1.64
Occupation		
Managerial, professional, technical	0.68	0.11**
Clerical, sales	0.70	0.78
Blue collar	1.00	1.00
Job strain		
All occupations	1.64	1.06
Managerial, professional, technical	-	6.79*
Clerical, sales, blue-collar	-	0.84
Age and control variable for cycle		
Cycle	1.37**	1.39**
Age	1.27**	1.27**

Source: National Population Health Survey, 1994 to 2002
** Significantly different from the reference group p<0.05, ** p<0.01.*
Reference category

Chart Predicted probabilities of retirement for managers, professionals and technicians by level of job strain



A low score for job strain is defined as 0.2, a middle-low score as 0.7, a middle-high score as 1.2, and a high score as 1.7.

making it difficult for them to retire unless they have accumulated considerable savings and wealth (Hayward, Friedman and Chen 1998). In addition, the self-employed generally have more control over their work schedule, allowing them the attractive option of easing into retirement by gradually reducing the number of hours they work. If such an option were offered to employees, many considering retirement might possibly also choose to continue working (Morissette, Schellenberg and Silver 2004).

Consistent with other research on retirement (Schellenberg 2004), immigrants were significantly less likely to retire than the Canadian-born. Among immigrants working full time in 1994-95, 13% had retired by 2002-03, compared with 19% of the Canadian-born. Even when other factors were taken into account, the association between immigration status and the likelihood of retirement remained significant (Table). Immigrants generally arrive in Canada at a later stage in their career, making it more difficult for them to accumulate sufficient years of work to consider early retirement.

Past studies indicate that the relationship between level of education and retirement is ambiguous. While a higher level of education usually favours a better economic outcome and hence the possibility of leaving the labour market earlier, it may also offer more non-economic rewards and opportunity for advancement, encouraging workers to remain in the labour market longer (Kosloski, Ekerdt and DeViney 2001). Overall, the present results are fairly consistent with previous findings and show that workers who had completed college were more likely to retire than those with a university degree. However, the latter did not differ from those whose highest level of schooling was elementary or high school.

Similar to what previous studies have found (Hayward and Hardy 1985), self-perceived fair or poor health was related to retirement. However, this result just failed to reach statistical significance ($p = 0.0501$). This is partly because those who did not work because of illness or disability, and who are sometimes considered retirees in other studies, were censored in the model (see *Data source and definitions*). A supplementary analysis in which illness/disability was the event of interest (versus staying in the labour market) supported the hypothesis that health is strongly related to leaving the labour market earlier among near-retirees. Those in fair or poor health were 13 times more likely to quit work because of illness or disability than those in excellent health (results not shown).[1]

Men were less likely to retire early than women (15% versus 22%), the association remaining significant when all other factors in the multivariate analysis were taken into account. Some authors have suggested that the effect of job strain on health may be different for men and women (Piltch et al. 1994), but supplementary models showed that the correlation between job strain and the likelihood of retirement is very similar for both sexes (results not shown).

Workers in Quebec, Newfoundland and Labrador, and Nova Scotia were more likely to retire early than those in Ontario. These three provinces had the highest unionization rates in Canada in 2003 (Akyeampong 2004). Being a member of a union, and therefore having pension coverage, significantly increases the possibility of taking early retirement.

Conclusion

Lack of control combined with too many job demands significantly increases the likelihood of early retirement for individuals in managerial, technical and professional occupations. Previous studies found that expected age of retirement was lower for individuals expressing dissatisfaction with their job (Kim and Hong 2001; Adams 1999). This study confirmed these findings by examining actual retirement behaviours as opposed to expectations.

With the retirement of the baby-boom generation imminent, increasing attention is being paid by employers and policy makers to strategies that could encourage older workers to remain in the workforce. While measures such as increasing salaries or reducing work hours have been proposed, the possibility of greater job autonomy has rarely been considered. Employers might find they could retain some older workers if they offered them more control over their daily tasks. If more autonomy were not possible, fewer demands might also encourage older workers to remain on the job.

Perspectives

Note

1 In the sample aged 45 to 57 and working full time in 1994-95, 7% had left the labour market because of illness or disability by 2002-03. These individuals are sometimes treated as retirees in other studies. In this study, a strict definition of retirement, limited to respondents who said that they were not working because they were retired, was used. A supplementary analysis that combined those who left the labour market for illness *or* for retirement as the event of interest was conducted. The conclusions about the relationship between job strain and retirement/illness remained the same: For managers, professionals and technicians, the greater the level of job strain, the greater the likelihood of leaving the labour market for retirement or illness/disability. Poor or fair health was also significantly related to leaving the labour market for illness or disability.

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